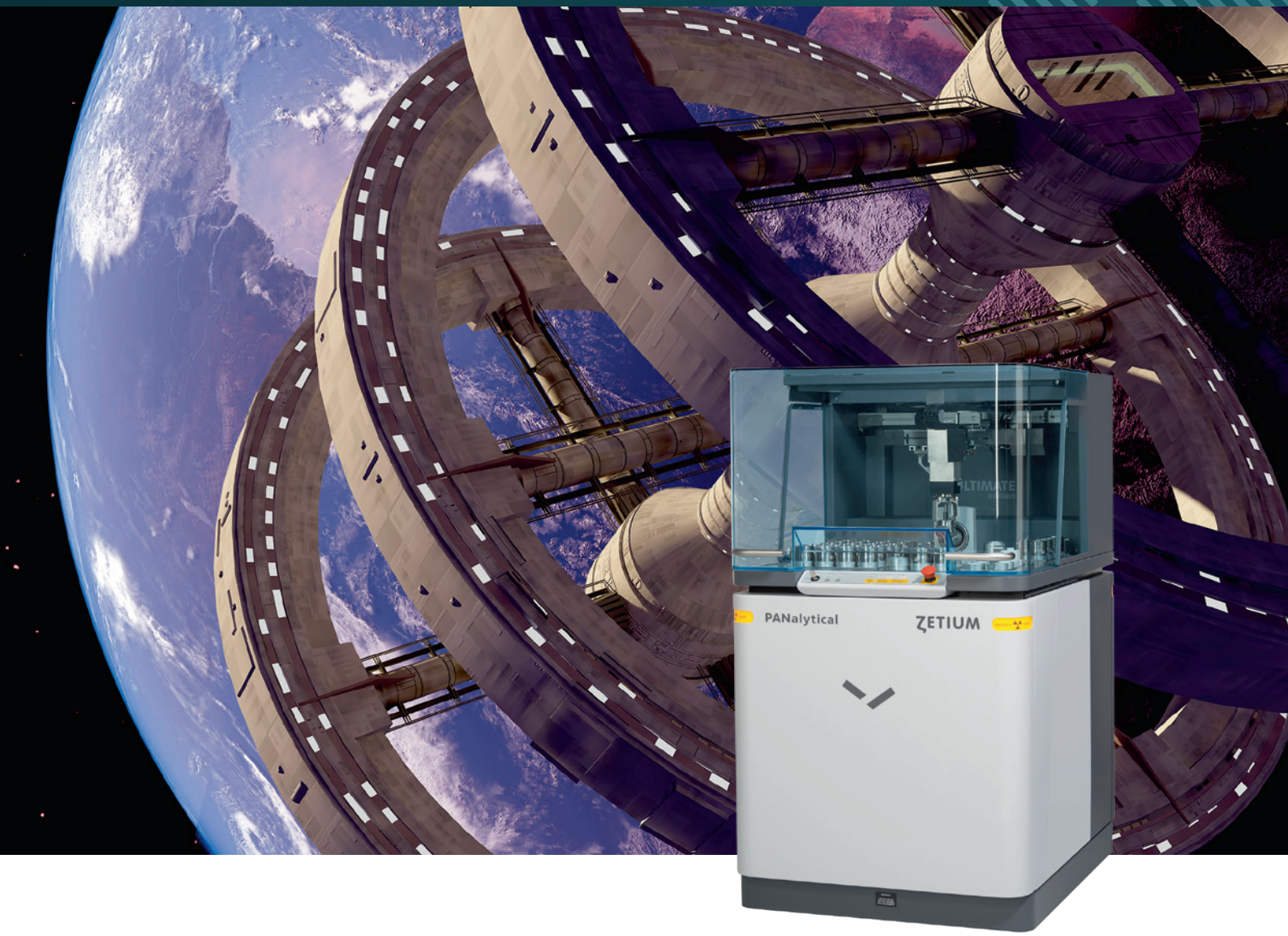
Malvern Panalytical
a spectris company

Zetium

Ultimate edition



The Ultimate edition of the Zetium spectrometer is a complete analysis tool for both research and industrial applications, designed for environments where ultimate performance is key. It can analyze any kind of sample, including unknown material – and we can also optimize it to your budget and performance requirements.

Elemental innovation

Continuous development, improved customer experience

Science-based, benefit-driven innovation on the Zetium Ultimate edition has made it the most powerful multipurpose tool for the analysis of a wide range of materials, from liquids to layered materials.

Elemental intelligence

Advanced analytical software for advanced analytical hardware

Now, our SuperQ software is enabling even more technology combinations and analytical possibilities for the Zetium. Its Virtual Analyst also makes setting up and operating the system simpler.

Elemental technology

60 years of experience: The ideal starting point

The Zetium Ultimate edition follows a long line of wavelength-dispersive XRF spectrometers, including Axios, MagiX, and PW2400. Over the years, we've fine-tuned this technology – providing a strong foundation for the Zetium platform.

Elemental support

Reliable support – whatever the location

From service and training to laboratory analysis, we support you all the way. With a worldwide network of experienced engineers, plus the industry's largest pool of application scientists, we're always here to help.

A new horizon for XRF

By seamlessly combining our core and innovative technologies, the Zetium Ultimate edition delivers unrivaled analytical performance, speed, and robustness.

Accuracy across the periodic table

The Zetium Ultimate edition combines a thin (50µm) X-ray tube window, dedicated multilayer and curved crystals, and high-yield collimators – so you can get results even for ultra-light elements. What's more, the combination of HiPer scint and duplex detectors means you can rapidly analyze transition elements and heavy elements. And you can also analyze two elements simultaneously using the HiPer channels – saving you valuable time.

Virtual Analyst: Wave goodbye to guesswork

Analysis and application development are complex tasks with many critical choices and variables. SuperQ's Virtual Analyst software can help you make those choices – just like having an application specialist available 24/7. The software actively calculates your ideal measurement conditions, taking into account spectrometer configuration, sample and preparation information, line overlaps, required analytical range, detection limits, and precision. No more guesswork!

Saving valuable time and money

With the Zetium's advanced sample handling and completely integrated solutions, you can minimize the time you spend on manual operations – and maximize your return on investment. You can also configure fully automated systems for optimized process control – including complementary technologies like optical emission (OES) and X-ray diffraction (XRD), which are all coordinated by a LIMS system.

Combined technologies, unlimited benefits

The Zetium uses innovative SumXcore technology, where wavelength-dispersive (WDXRF) and energy-dispersive (EDXRF) technologies are combined. This means you can perform sequential and simultaneous analysis on a single platform – for fast, powerful screening, with norm compliance for both technologies. The small-spot mapping using the ED Core's SDD detector also lets you perform compositional mapping for fast, accurate inclusion analysis. What's more, you can rapidly collect the entire spectrum during routine analysis – so you can quickly detect contaminants during process control.

No standards? No problem!

Zetium has a comprehensive set of standards and dedicated software support – but, if you've got a material with unknown composition, you can also use the Omnian standardless package to analyze it, which is included in Zetium Ultimate edition. Plus, you can also use this package for fast screening analysis – no dedicated reference materials needed.

A package for every material

Our turn-key application templates and software packages mean you can always meet your analytical requirements. From our Pro-Trace software for accurate, precise trace analysis, to NiFeCo and Cu-base for the analysis of production samples in the metals industry, we've got a solution for your material.

Top-quality multilayered materials analysis

What about measurements for multilayered materials and coatings like deposited metals or processed semiconductor wafers? Just leave it to our expert Virtual Analyst software! It'll recommend the best choice of measurement and analysis settings for you using the Stratos software package. By automating these steps, you can be confident about meeting your specifications for all coatings on metallic substrates – single and multilayer alike.

Case study

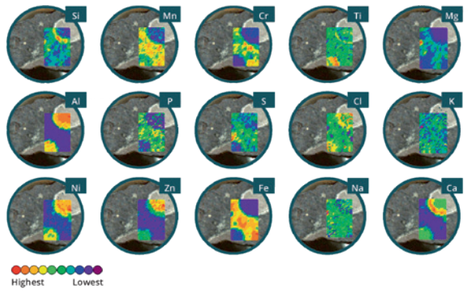
Small-spot mapping: Insight into our early solar system

Compositional mapping of a chondritic sample

Among the rarest types of meteorites, carbonaceous chondrites have a highly distinctive geochemical signature. Their non-volatile chemical composition is the most primitive of any rock in the solar system – close to that of the Sun and the overall solar system. Because of this, they are often used as geochemical references in dating studies.

In this study, the Zetium's small-spot mapping function was used to map the distribution of a variety of elements in a chondritic meteorite sample (type CV3) with calcium-aluminum-rich inclusions (CAIs). The function works by combining the ED core with the sample introduction turret's innovative translation mechanics.

The meteorite sample was mounted in a special sample holder, designed to accommodate a variety of irregularly shaped samples. A 5 mm x 7.5 mm area of the sample's surface was mapped using 600 spots of 500 µm each. Each spot was measured for 60 seconds, making the total measurement time 10 hours. Images showing the distribution and relative concentration of 15 elements with the analyzed area clearly show the compositional differences between the host sample matrix and the CAIs.

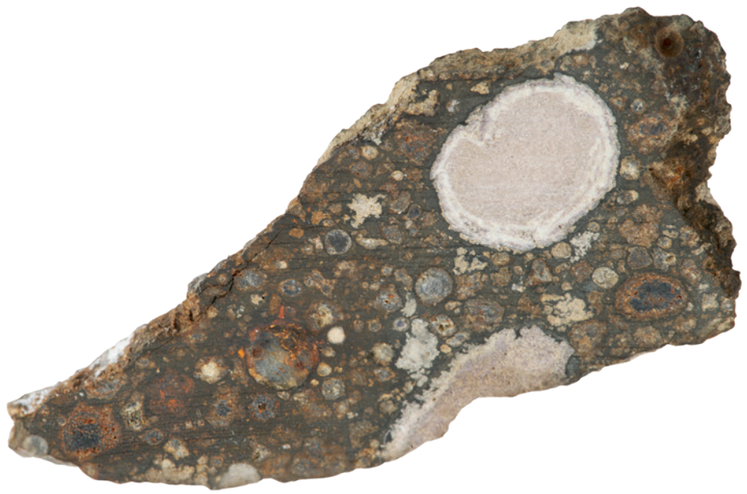


Small-spot mapping and XRF: The ideal match

Adding small-spot mapping to full-function WDXRF analysis opens endless possibilities for many labs. And, in contrast with other elemental mapping techniques like scanning electron microscopy or electron microprobe analysis, XRF requires little to no sample preparation. This makes element mapping – an indispensable technique for scientific research and process troubleshooting – straightforward and accessible to users of varying experience levels.

EDXRF core and small-spot analysis with mapping:

- Fast, multi-element data acquisition.
- Individual inclusion analysis and element distribution mapping, revealing compositional trends and heterogeneities.
- Standardless Omnian quantification and/or material-specific calibrations.



SMART MANAGER, SMART ZETIUM

All the distractions and demands of quality control management can make it difficult to get the most out of your instruments. To make it easier, we've connected the Zetium to our Smart Manager platform – making it a Smart Zetium.

Meet your new trusted team member

This cloud-based 'control room' connects all your Zetium instruments. In this way, it gives you a clear picture of their performance – and therefore the quality of your measurements – wherever they are in the world. So you can keep on top of performance, optimize usage, reduce downtime, and unleash the potential of your data. Just like having a new, trusted member of your team!

Maximum data security

And rest assured: all your data remains yours, and is only visible to Malvern Panalytical. Smart Manager uses the latest Microsoft Azure cloud technology, ensuring that your data is safe and secure at all times. We don't collect data from your own samples unless you explicitly request it.

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Why choose us?

When you make the invisible visible, the impossible is possible.

Our analytical systems and services help our customers to create a better world. Through chemical, physical and structural analysis of materials, they improve everything from the energies that power us and the materials we build with, to the medicines that cure us and the foods we enjoy.

We partner with many of the world's biggest companies, universities and research organizations. They value us not only for the power of our solutions, but also for the depth of our expertise, collaboration and integrity.

With over 2200 employees, we serve the world, and we are part of Spectris plc, the world-leading precision measurements group.

Malvern Panalytical. We're BIG on small™

Service & Support

Malvern Panalytical provides the global training, service and support you need to continuously drive your analytical processes at the highest level. We help you increase the return on your investment with us, and ensure that as your laboratory and analytical needs grow, we are there to support you.

Our worldwide team of specialists adds value to your business processes by ensuring applications expertise, rapid response and maximum instrument uptime.

- Local and remote support
- Full and flexible range of support agreements
- Compliance and validation support
- Onsite or classroom-based training courses
- e-Learning training courses and web seminars
- Sample and application consultancy

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